**REMARKS**

The Examiner has rejected Claims 1, 29 and 39 as being anticipated by Zaki. The Examiner appears to take the position that since Zaki states that the conductor resonators can have a cylindrical shape, but also a ring or doughnut shape, that Zaki therefore describes the use of cut resonators. It is respectfully submitted that that conclusion by the Examiner is wrong. A ring shaped resonator or doughnut shaped resonator is simply a cylindrically shaped resonator with a cylindrical shape removed from a center thereof. The ring shape and doughnut shape are identical to one another and function in much the same manner as a cylindrically shaped resonator. Applicant is not aware of any reference in the prior art that would indicate that a ring shaped resonator is a cut resonator. In Applicant's previous response it is stated that a cut resonator is part of a cylindrical resonator that is cut away. That statement is incomplete and incorrect. It is respectfully submitted that a cut resonator is also asymmetrical about what would otherwise be the longitudinal center axis of the resonator (i.e. if the resonator was not a cut resonator). Still further, a radial face of the resonator is "cut" as discussed below. A ring shaped resonator is symmetrical about the longitudinal center axis of the resonator and it is respectfully submitted that a ring shaped resonator is not a cut resonator and that the conclusion of the Examiner on this point is wrong. Secondly, the Examiner states that it would have been obvious to modify the shape of the resonators of Zaki to be half cut or to have a first and second cut portion as taught by Nishikawa. Zaki does not have any cut resonators for the reasons set out above. The Examiner acknowledges that Nishikawa does not disclose a motivation for using cut resonators, but states that Zaki does disclose a suggestion for using cut resonators. The suggestion (which is set out in Column 6 beginning at Line 51) refers to the use of composite resonators in order to realize a complex filter function. The composite resonators as shown in Figures 4A and 4B and are made from two different materials. The composite resonators are not cut resonators and are not described or referred to as cut resonators by Zaki. The ring resonators described by Zaki are also not cut resonators.

The Applicant has used conductor loaded cut resonators in a bandpass filter to improve the spurious performance. There is no suggestion in Zaki that cut resonators be used to improve spurious performance. Zaki does suggest that composite ring resonators

can be used to improve spurious performance. Since cut resonators were described in Nishikawa in 1983, if Zaki would have realized at the time of filing of the application that gave rise to the Zaki patent that half cut or quarter cut conductor resonators could be used to significantly improve spurious performance, he would have used them. The cut resonators have a significant advantage over the composite ring resonator suggest by Zaki and the cut resonators of the present invention. The composite ring resonators described in Zaki are comparable in size to the composite cylindrical resonators of Zaki. The half cut resonator and quarter cut resonator of the present invention are half the size and one quarter the size respectively of a cylindrical resonator. The size reduction achievable by using the cut resonators of the present invention is therefore much greater than the size reduction achievable by using a ring resonator in place of a cylindrical resonator. As the Examiner has acknowledge, Nishikawa does not disclose a motivation for the modification.

Thirdly, the Examiner states that Nishikawa shows a half cut resonator and a resonator with a modified shape having a first cut portion and a second cut portion (Figures 5 and 7). Nishikawa clearly describes dielectric resonators and not conductor resonators. Therefore, Nishikawa does not apply and would not result in the present invention as the benefits achieved by the present invention would not be achieved by using cut dielectric resonators.

Also, Applicant takes issue with the Examiner's statement that the half cut resonator in Figure 7 of Nishikawa discloses a second cut. It is respectfully submitted that the semicircular portion that has been removed from the center of the half cut resonator in Figure 7 is not a second cut as the original resonator was simply a ring shaped resonator as shown in Figure 2 of Nishikawa. Referring to Column 2 beginning at Line 64 and ending in Column 3 at Line 27, there is described a conventional doughnut type resonator 12. The description provides that the lines of magnetic field M passing through the center hole of the resonator 12 extend parallel to the axis of the resonator 12 and, when viewed from the top such lines further extend radially outward from the resonator 12. Furthermore, an electric field E is produced inside the resonator 12 in the form of a loop about the center of the resonator 12. Therefore, the magnetic field M is in a linked relationship with the electric field E. When an imaginary plate 14 of an

electrically conductive material, which includes the axis of the resonator 12 is assumed, such plate does not cut across any lines of magnetic field M. Accordingly, the magnetic field M will not be disturbed by the presence of such a plate 14 and neither will the electric field E. Therefore, it can be considered that the plate 14 divides the resonator 12 into two sectors 12a and 12b without disturbing the magnetic field M nor the electric field E and that the plate 14 shields the two sectors 12a and 12b from each other. Thus, when one sector, e.g. 12b is removed, the other sector 12a provided with the plate 14 still functions as a resonator. In this case, the plate 14 touching the cut end face of the sector 12a is necessary to maintain the electric field E produced in the resonator, i.e. sector 12a. It is respectfully submitted that it is the "cut face" of the resonator sector 12a or 12b that gives rise to the resulting half cut resonator being referred to as a cut resonator. The cut face of the cut dielectric resonator in Nishikawa is bonded to the wall or coated with a conductive film.

Applicant reiterates that a ring shaped resonator is not considered by those skilled in the art to be a cut resonator. The Examiner has relied upon Zaki to reject Claims 1, 21 and 39 on the basis of anticipation. It is therefore respectfully submitted that for any or all of the reasons given above with respect to Zaki that the rejection of Claims 1, 21 and 39 be withdrawn.

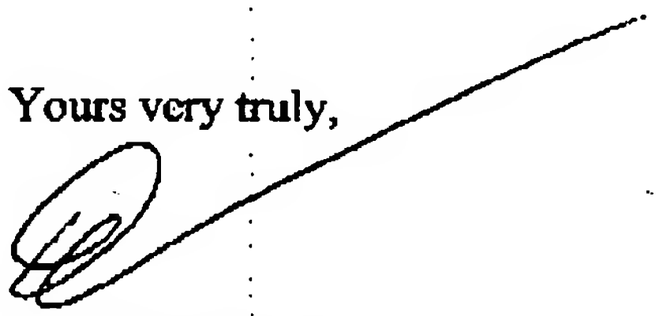
Further, the Examiner has rejected Claims 2, 4 to 7, 11, 12, 15, 18 to 20, 22, 24 to 27, 31, 32, 33 and 35 to 37 as being unpatentable over Zaki in view of Nishikawa. For any or all of the reasons given above with respect to Zaki or Nishikawa, it is respectfully submitted that the Examiner's rejection be withdrawn. In summary, Zaki does not disclose the use of cut resonators and a ring shaped resonator is not a cut resonator. Further, Nishikawa describes a half cut dielectric resonator but does not describe a half cut conductor resonator. A cut dielectric resonator would not result in improved spurious performance and is not obvious from the teachings of Zaki and Nishikawa. Nishikawa was issued in 1983 and Zaki was issued in 1998. Cut dielectric resonators were well known when the Zaki application was filed on April 19, 1996. Cut dielectric resonators were known even before Nishikawa was published in 1983. If it had been obvious to use cut conductor resonators in a bandpass filter to achieve improved spurious performance over previous filters, then that invention would have been made long before the present

invention. It is respectfully submitted that the Examiner is using hindsight and taking the position that the present invention is obvious. There is no motivation suggested in either Zaki or Nishikawa that would result in the filter of the present invention.

The Examiner has rejected Claims 13, 14 and 34 as being unpatentable over Zaki in view of Nishikawa and further in view of Duong. Zaki does teach that the resonator element can have a ring or doughnut shape, but the ring or doughnut shape is not considered to be a cut resonator. Nishikawa does describe cut dielectric resonators, but does not describe cut dielectric resonators having a first cut portion or a first and a second cut portion. Nishikawa does describe a ring shaped cut dielectric resonator. Nishikawa does not describe any cut conductor resonators. Thus, Zaki and Nishikawa do not teach all of the limitations of the claims as stated by the Examiner and the objection should be withdrawn. Duong does describe a ceramic resonator 16 in one cavity and a metallic post 12 in an adjacent cavity, but the combination of the three patents does not result in the present invention. For the reasons given with respect to the earlier combination of Zaki and Nishikawa it would not be obvious to use conductor loaded cut resonators in the filter described by Zaki in order to obtain a cavity resonator with improved spurious performance. Further, the Duong patent shows the metallic post mounted directly on the wall of the cavity. It is therefore respectfully submitted that the rejection of Claims 13, 14 and 34 be withdrawn.

It is therefore respectfully submitted that the Claims, as previously amended are in condition for allowance.

Yours very truly,



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